

STS-121 Post-Mission Summary



The Shuttle [Discovery](#) launched from [Kennedy Space Center](#) (KSC) Launch [Pad 39B](#) on July 4, 2006 at 1838Z and landed at the [shuttle landing facility](#) (SLF) at KSC on July 17, 2006 at 1315Z. The Discovery [astronaut crew](#) successfully completed the [STS-121](#) test flight and re-supply mission to the [International Space Station](#).

Weather forced a scrub of the first two launch attempts July 1 and 2. The forecast for both mid-afternoon launch attempts included thunderstorm anvils. Easterly low level winds and westerly upper level winds favored the development of thunderstorms during the afternoon along the Florida east coast sea breeze west of KSC, with the resulting anvils spreading back east over the SLF and launch pad. On both days the thunderstorms developed as forecast resulting in “NO GO” weather conditions.

The weather improved for the July 4 launch. An upper level low off the east coast of Florida pushing south into the Bahamas brought a change in the upper level winds over KSC from westerly to northeasterly. Drier air aloft and the upper level wind directional change diminished the thunderstorm anvil threat for the afternoon launch. Low level flow continued from the east northeast so the threat of showers and crosswinds remained in the initial forecast. Morning showers that developed over the water east of KSC dissipated prior to the launch and showers along the sea breeze west of KSC moved away from the SLF. Crosswinds concerns were eliminated when the limit was increased to 17 knots with weather reconnaissance pilot evaluation of the low level winds.

Weather for the landing on July 17 turned out to be a challenge. A diffuse surface front and upper level trough were pushing slowly south through northern Florida and the Atlantic coastal waters on landing day. The threat of showers and thunderstorms along and ahead of these features were the primary weather concern. Prior to the deorbit burn showers and thunderstorms remained north and east of the flight rule stand-off area of 30nm circle from the SLF and showed little southward movement. A detached anvil from a dissipated thunderstorm 50nm north of the SLF was spreading slowly south but was forecast to remain outside the flight rule stand-off area. A deck of middle layer clouds covered the area and was expected to delay heating and thus decrease the threat of showers. For that reason showers were removed from the forecast and the shuttle was cleared to land. About 30 minutes after the de-orbit burn widely scattered showers began to develop in a narrow east-west band about 10nm south of the SLF. These showers were developing in the middle layer cloud deck near the SLF southern runway approach. SMG advised the flight control team to redesignate landing to the northern end of the SLF runway to avoid these showers. The decision was made to land on the northern end of the SLF runway and the shuttle landed safely at 1315Z.

[SMG's](#) ascent/entry team for STS-121 consisted of meteorologists Rich Lafosse, Tim Garner, Tim Oram and Brian Hoeth.

Submitted by: Rich Lafosse
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